Bacteria TMDLs in the Goose Creek Watershed

November 20, 2002

305(b) Assessment and 303(d) Listing Processes

- Monitor and assess water quality for 305(b) Report
- Place waters exceeding water quality standards on 303(d) List
- Develop Total Maximum Daily Load (TMDL) for each listed water
- Implement TMDL
- Remove water from 303(d) List when TMDL is developed, but continue to track in 305(b) Report

Impairments in the Goose Creek Watershed

WATER BODY	CAUSE	STREAM NAME	LENGTH (Miles)	YEAR LISTED
VAN-A05R	Bacteria	Cromwells Run	3.61	1998
VAN-A06R	Bacteria	North Fork Goose Creek	4.29	1998
VAN-A07R	Bacteria	Beaverdam Creek	6.32	1998
VAN-A08R	Bacteria	Goose Creek	4.77	2002
VAN-A08R	Bacteria	Little River	6.13	1998
VAN-A08R	Bacteria	South Fork Sycolin Creek	3.31	2002
VAN-A08R	Bacteria	Sycolin Creek	7.10	1996
VAN-A08R	*Benthic*	*Goose Creek*	*4.77*	1998
VAN-A08R	*Benthic*	*Little River*	*6.13*	1998

Status of Benthic Impairments in the Goose Creek Watershed

- DEQ had requested delisting of Goose Creek and Little River benthic impairments
  - improvement from moderately to slightly impaired
- Public comments received expressed concern about delisting these segments
- EPA did not agree to delisting and notified DEQ of decision in late September 2002
- Benthic TMDLs will be developed separately from bacteria TMDLs and submitted by May 2004

Water Quality Standards

- Water Quality Standards (WQS) are regulations based on federal and state law that:
  - set **numeric** and **narrative** limits on pollutants
  - consist of **designated use(s)** and water quality **criteria**
- Purpose of WQS:
  - **protection** of 5 designated uses (aquatic life, fishing, shellfish, swimming, drinking water)
  - **restoration** of state waters (TMDLs)
- Listing of impaired waters and TMDL development are based on WQS

Current Bacteria Standard

- Indicator species: **fecal coliform**

- **Instantaneous max**: **1,000 cfu/100 mL**
- Applicable for data sets with 1 or fewer samples in 30 days
- Used in **water quality assessment** because monitoring is usually conducted bimonthly

- **Geometric mean: 200 cfu/100 mL**
- Applicable for data sets with 2 or more samples in 30 days
- Used in **TMDL development** because model output is usually daily

New Bacteria Standard

- Change in indicator species from fecal coliform to ***E. coli*** (fresh water) and **enterococci** (salt water)
  - better correlation with swimming-associated illness
- New indicator species: ***E. coli***
- **Instantaneous max**: **235 cfu/100 mL**
- Applicable for all data sets; no samples may exceed the maximum
- **Geometric mean: 126 cfu/100 mL**
- Applicable for data sets with 2 or more samples in a calendar month

New Bacteria Standard (cont'd)

- New **fecal coliform** criteria:
  - necessary for transition from fecal coliform to *E. coli*
  - will be phased out when 12 *E. coli* observations available or after June 30, 2008

- **Instantaneous max**: **400 cfu/100 mL**
- Applicable for all data sets; no more than 10% of samples in a calendar month may exceed the maximum

- **Geometric mean: 200 cfu/100 mL**
- Applicable for data sets with 2 or more samples in a calendar month

New Bacteria Standard (cont'd)

Indicator	Status	Instantaneous Maximum (cfu/100mL)	Geometric Mean (cfu/100 mL)
Fecal Coliform	Current	1,000	200
Fecal Coliform	New	400	200
E. coli	New	235	126

- Changes effective pending EPA approval, anticipated December 2002/January 2003
- **New TMDLs must meet the new standard**

What is a TMDL ?

A TMDL is a **pollution budget**:

TMDL = Sum of WLA + Sum of LA + MOS

Where:

- TMDL = Total Maximum Daily Load
- WLA = Waste Load Allocation (point sources)
- LA = Load Allocation (nonpoint sources)
- MOS = Margin of Safety

How is a TMDL developed?

- Identify all sources of a given pollutant within the watershed
- Calculate the amount of pollutant entering the stream from each source
- Calculate the pollutant reductions needed, by source, to attain water quality standards
- Allocate the allowable loading to each source and include a margin of safety

Required Elements of a TMDL

A TMDL must:

- be developed to meet water quality standards
- be developed for critical stream conditions
- consider seasonal variations
- consider impacts of background contributions
- include wasteload and load allocations (WLA, LA)
- include a margin of safety (MOS)
- be subject to public participation
- provide reasonable assurance of implementation

TMDL Development Process

- Public meeting to announce beginning of TMDL development
  - October 17, 2001
- **Public meetings to present draft TMDLs**
  - **November 14 and 20, 2002**
- Submit TMDLs to EPA for approval
  - December 2002
- Approved TMDLs adopted by the SWCB and incorporated into appropriate WQMP

Roles of DEQ and DCR in TMDL Development

- DEQ is the lead for TMDL development
- DCR is the lead for nonpoint source TMDL implementation
- DEQ is responsible for ensuring public participation and submitting TMDLs to EPA for approval

Opportunities for Stakeholder Involvement in the TMDL Process

- Comment on the draft bacteria TMDLs
  - The draft report is available at http://www.deq.state.va.us/tmdl/tmdlrpts.html
- Participate in the development of benthic TMDLs and staged reduction targets
- Participate in the development of TMDL implementation plans

Opportunity for Public Comment on the Goose Creek TMDLs

- Comment period ends **December 13, 2002**
- Please send written comments to:

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